

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Barcelon et al. )  
Serial No. 09/092,696 )  
Filed: June 5, 1998 )  
For: ENHANCED FLAVORING COMPOSITIONS )  
CONTAINING N-ETHYL-P-METHANE-3- )  
CARBOXAMIDE AND METHOD OF )  
MAKING AND USING THE SAME )

Declaration of Jesse John Kiefer Pursuant to 37 C.F.R. §1.132

I, Jesse John Kiefer, do hereby declare as follows:

1. As of the date of this Declaration, I am currently employed as the Vice President of Gum Technology and Process Development at Cadbury-Adams. I have been working in the field of chewing gum for over ten years. Prior to such employment, I was employed with Unilever and Lever Brothers Co. in Product Development for Household Products. I received a Ph.D. in Mineral Engineering from Columbia University in 1993, a M.S. in Chemistry from Lehigh University in 1985 and a B.S. in Chemistry from Moravian College in 1983.
2. I am a joint inventor of the subject matter of the above-identified patent application.
3. I have reviewed the Examiner's Office Action dated May 15, 2007, rejecting claims 14 and 18 of the subject application under 35 U.S.C. §103(a) over U.S. Patent No. 5,372,824 to Record et al. (hereinafter "Record"), and rejecting claims 9, 11, 13, 14, 16 and 18 of the subject application under 35 U.S.C. §103(a) over U.S. Patent No. 5,009,893 to Cherukuri et al. (hereinafter "Cherukuri"). I also have reviewed these cited patents.

4. Record is related to mint flavored chewing gums having reduced bitterness. The chewing gums include a water insoluble base portion, a water soluble portion and a mint flavor from which at least a portion of 1-menthol has been removed. Removal of the 1-menthol from the mint flavor itself reduces the bitterness of the chewing gums.

5. Cherukuri is related to edible compositions, such as chewing gums and confections, that provide long-lasting breath freshening perception without bitterness. The edible compositions include menthol and an N-substituted-p-menthane carboxamide compound. According to Cherukuri, the combination of menthol and an N-substituted-p-menthane carboxamide in the specified amounts results in a heightened cooling sensation. The presence of only one these agents, however, will fail to provide the desired cooling effect.

6. The subject invention is directed to chewing gums containing an enhanced flavoring composition including a fruit or spice flavor and N-ethyl-p-menthane-3-carboxamide (also known as "WS-3"). The addition of small amounts of WS-3, a known cooling agent, accentuates the perception of the fruit or spice flavor, thereby producing a synergistic effect, as disclosed in the specification of the subject application. In particular, WS-3 is present in an amount effective to enhance the fruit or spice flavor, i.e., about 0.04 to about 2.2% by weight of the enhanced flavoring composition.

7. The subject application describes experiments conducted in association with the present invention. In particular, Example II of the subject application describes experiments conducted to demonstrate the enhancement of fruit and spice flavors by adding small amounts of the cooling agent WS-3 in chewing gums.

8. The data obtained from these experiments evidences that the use of small amounts of the cooling agent WS-3 in combination with a fruit or spice flavor in chewing gum significantly enhances the flavor. Thus, there is a synergistic effect provided by the combination of WS-3 with a fruit or spice flavor in chewing gum, when used in the claimed

amounts. Such enhancement of the flavor produced by the addition of WS-3 to a fruit or spice flavor in chewing gum in this experiment was unexpected.

#### COMPARATIVE TESTS – EXAMPLE II

9. As described in Example II at pages 11-12 of the subject application, two different types of flavored chewing gums were tested. The first type of chewing gum was a citrus flavored chewing gum, which is a fruit flavored chewing gum. The second type of chewing gum was a cinnamon flavored chewing gum, which is a spice flavored chewing gum.

10. For each of these flavored chewing gums, a control gum and two different inventive gums were prepared. The control gum included either the citrus or cinnamon flavor, but did not include any WS-3. The inventive gums were prepared in the same manner as the control gum, except that 0.02 g of the sweetener was replaced with WS-3 in the first inventive gum and 0.04 g of the sweetener was replaced with WS-3 in the second inventive gum. Therefore, the two inventive gums for each flavor included 0.02 g WS-3 (which corresponds to 0.02% by weight of the chewing gum) and 0.04 g WS-3 (which corresponds to 0.04% by weight of the chewing gum), respectively. These are small amounts of WS-3 in the chewing gum.

11. For the citrus flavored chewing gums, based on the amounts of all of the ingredients contained in the gum as set forth in Example II, 0.02 g WS-3 constitutes about 1.04% WS-3 by weight of the enhanced flavoring composition itself (including citrus flavor and WS-3). 0.04 g WS-3 constitutes about 2.06% WS-3 by weight of the enhanced flavoring composition itself. Both of these inventive gums, therefore, fall within the range of WS-3 recited in the claims of the subject application, i.e., about 0.04 to 2.2% by weight of the enhanced flavoring composition.

12. For the cinnamon flavored chewing gums, based on the amounts of all of the ingredients contained in the gum as set forth in Example II, 0.02 g WS-3 constitutes about 1.10% WS-3 by weight of the enhanced flavoring composition itself (including cinnamon

flavor and WS-3). 0.04 g WS-3 constitutes about 2.17% WS-3 by weight of the enhanced flavoring composition itself. Both of these inventive gums, therefore, fall within the range of WS-3 recited in the claims of the subject application, i.e., about 0.04 to 2.2% by weight of the enhanced flavoring composition.

13. Example II further describes how the control gum and inventive gums were compared for purposes of this experiment. In particular, the inventive gums were compared to the control gum for each flavor by a taste panel consisting of six people who were asked to evaluate the chewing gums by commenting on perceived flavor differences and flavor liking. Such panels are commonly used in evaluating chewing gum products. The results for both the citrus and cinnamon flavored gums are set forth in a table in Example II, which is reproduced below.

Flavor	N-Ethyl-P-Menthane-Carboxamide Usage Level	Evaluation
Citrus	0	Good upfront citrusy impact with sweet sour notes
Citrus	0.02%	More citrusy, better defined and better perceived acid character
Citrus	0.04%	Peely notes very defined, sharper acid notes with perceived bitterness and slight tingly/sensate cue
Cinnamon	0	Sweet cinnamon character with slight burning sensation
Cinnamon	0.02%	Defined difference; cinnamon spice character better defined with a perceived burn sensation
Cinnamon	0.04%	Cinnamon character has a harsh woody note and more burning sensation

14. As can be seen from the results in the table above, the inventive gums containing 0.02% and 0.04% WS-3 by weight of the chewing gum exhibited enhanced flavor effects as compared

to the control gums for each flavor. With respect to the citrus flavored gums, both the 0.02% and 0.04% WS-3 gums showed a more defined citrus flavor. A more defined citrus flavor represents an enhanced flavor perception as it provides the chewing gum user with a flavor more similar to that of real fruit. Consumers tend to prefer fruit gums with flavor profiles similar to real fruits. Although at 0.04% WS-3, some slight off-notes began to be perceived, enhancement of the citrus flavor was still perceived. Similarly, with respect to the cinnamon flavored gums, both the 0.02% and 0.04% WS-3 gums exhibited more defined cinnamon spice flavor. As with citrus flavor, a more defined cinnamon spice flavor represents an enhanced flavor perception as it provides the chewing gum user with a flavor more reminiscent of their experiences with ground cinnamon and spices. Consumers tend to prefer cinnamon spice gums with flavor profiles in which the cinnamon spice notes are more reminiscent of ground cinnamon and spice experiences. Again, although some slight off-notes began to be perceived in the 0.04% WS-3 gum, the enhancement of the cinnamon spice flavor was still perceived. In accordance with these results, it is anticipated that as the level of WS-3 is increased beyond the amounts recited in the claims, more pronounced off-notes would be perceived, thereby no longer producing an enhanced perception of the fruit or spice flavor.

15. Therefore, the experiments demonstrate that using small amounts of the cooling agent WS-3, as recited in the claims, in combination with a fruit or spice flavor produces an enhancement of the fruit or spice flavor in chewing gum. This is a synergistic effect between the WS-3 and the fruit or spice flavor. One would expect an additive effect, i.e., a flavor profile including flavor notes along with a cooling sensation. The synergistic effect derives from an enhanced flavor profile with more defined flavor notes rather than an additive effect. The U.S. patents cited in the Examiner's Office Action dated May 15, 2007 do not contain any teaching relating to a possible synergy between WS-3 and fruit or spice flavors. Moreover, it was known that cooling agents, particularly menthol, can even reduce the perception of certain flavors. In particular, menthol has a bitter taste, which is known to distort flavors. Therefore, the enhancement of a fruit or spice flavor in chewing gum by adding small amounts of the cooling agent WS-3 as demonstrated by this experiment was unexpected.

16. I hereby declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Dated this 14 day of September 2007

  
Jesse John Kiefer